PROCEDURE FOR THE CALIBRATION OF THE MARSHALL AUTOMATIC HAMMER TO THE HAND HAMMER AASHTO T 245

A. PURPOSE

This method is intended to provide instruction for the calibration of mechanically operated hammers to yield results comparable to that of the hand operated hammer as specified in AASHTO T 245, Section 2.3. The average actual density obtained using a mechanical hammer is compared to the average actual density obtained using a hand hammer. The number of blows with the mechanical hammer is adjusted accordingly. The hammers are calibrated from 50 to 75 blows per face.

B. PROCEDURE Calibrating the mechanical hammer.

1. Prepare 28 specimens of "E" mix with an identical mixture and compact them in accordance with the following schedule per AASHTO T 245.

COMPACTION SCHEDULE

No. of Specimens	No. of blows per face	Type Hammer	% AC
5	50	Hand	50 BL OPT
5	75	Hand	75 BL OPT
3	50	Mechanical	50 BL OPT
3	60	Mechanical	50 BL OPT
3	70	Mechanical	50 BL OPT
3	70	Mechanical	75 BL OPT
3	80	Mechanical	75 BL OPT
3	90	Mechanical	75 BL OPT

2. Calculate the average actual density for each set of specimens for both the hand-held and the mechanical hammers in accordance with GDT-39, "Method of Test for Specific Gravity of Compressed Bituminous Mixtures."

3 Plot the density versus the number of blows for the mechanized hammers. Draw a "best-fit" curve through the mechanical hammer data points, creating a separate curve for both the 50 blow and 75 blow data. Draw a straight line across the graph at the point representing the average hand-held hammer density.

C. ADJUSTMENTS FOR THE MECHANICAL HAMMER

The point at which the hand hammer average and the "best-fit" curve for each of the mechanical hammer results intersect will identify the number of blows required using the mechanical hammer to yield either 50 or 75 blow hand hammer results.

D. TOLERANCE

The number of blows is adjusted so as to produce the same compaction produced by the hand hammer.

EQUIPMENT CALIBRATION RECORD

Calibrated By: _____ Date: _____

Equipment: Automatic Mechanical Marshall Hammer Location (Lab): _____

Identification No.: _____ Calibration Frequency: 12 months

Previous Calibration Date: _____ Next Due Date: _____

Verification Equipment Used: Calibrated scales, SN: _____ Hand Hammer

Calibration Procedure: (In-house) OMR-CVP-26 / AASHTO T 245

Hand Hammer

Five (5) specimens compacted by hand at 50 blows

Specimen Number	Weight
1	_____
2	_____
3	_____
4	_____
5	_____
Average Density	_____

Five (5) specimens compacted by hand at 75 blows

Specimen Number	Weight
1	_____
2	_____
3	_____
4	_____
5	_____
	_____ Average Density

Mechanical Hammer

50 Blows

1 _____
2 _____
3 _____
Avg. Density

80 Blows

1 _____
2 _____
3 _____
Avg. Density

60 Blows

1 _____
2 _____
3 _____
Avg. Density

90 Blows

1 _____
2 _____
3 _____
Avg. Density

70 Blows

1 _____
2 _____
3 _____
Avg. Density

Use graph paper to plot density versus number of blows. Follow instructions to determine correct number of blows.

Number of blow required to calibrate to a hand hammer _____